

## **Section 55. Performance Standards**

- A. In any district no land shall be used in any manner other than in compliance with the performance standards herein set forth.
1. **FIRE AND EXPLOSION HAZARDS:** ALL activities involving, and all storage of inflammable and explosive materials shall be provided at any point with adequate safety devices against the hazard of fire and explosion and adequate fire fighting and fire suppression equipment and devices, standard in the industry. Burning of waste materials in open fires is prohibited at any point. The relevant provisions of State and Local Laws and Regulations shall also apply.
  2. **RADIOACTIVITY OR ELECTRIC DISTURBANCE:** No activities shall be permitted which emit dangerous radioactivity at any point or electrical disturbance. All applicable State and Federal Regulations shall be complied with.
  3. **NOISE REGULATION:** This ordinance shall apply to all sound originating within the limits of the City of Grapevine, Texas. It applies 24 hours of everyday of the week and year around. This ordinance does not apply to any moving vehicle or aircraft nor does it apply to sound emitted from any emergency warning device. This ordinance does not apply to the following activities as long as they are conducted in daytime hours as a normal function of a permitted, conditional or special use and the equipment is maintained in proper working condition:
    - Lawn and yard maintenance
- a. **General Provisions**
1. A person may not conduct a use that creates a sound which exceeds the sound levels established in Table 1 or that exceeds the background sound levels by 5 dBA., whichever is greater.
  2. A sound level meter that meets the standards of ANSI with Type 2 or greater precision must be used to determine whether the level of sound violates those established in this section. The instrument must be maintained in good working order. A calibration check should be made prior to and following any noise investigation.
  3. The sound levels must be measured at the bounding line between properties at a level five feet above ground level.

4. A sound level meter shall be used to determine the  $L_{eq}$  in dBA over an 8 minute time period.
5. The sound receiving property with the most stringent requirements will apply.
6. Traffic, aircraft, and other background sounds are not to be considered in measuring sound levels except when the background sound level is being determined.
7. All outdoor speakers in non-residentially zoned properties shall face away from contiguous residential zoning districts.

<b>Table 1.</b> <b>Maximum Permissible Sound Pressure Levels by Receiving Zoning District</b> <b><math>L_{eq}</math> Sound Level, dBA, Limits for Continuous Sound Sources</b>		
<b>District</b>	<b>Day Time (7:00 a.m. to 10:00 p.m.)</b>	<b>Night Time (10:00 p.m. to 7:00 a.m.)</b>
Residential	59	52

Corrections for Character of Sound Applied to Table 1. values are as follows:

- *If Sound is Impulsive in Character – (hammering, popping, exploding, etc.)*

Subtract 5 dB from Maximum Permissible Sound Levels

*Note* that for the purpose of this ordinance, an impulsive sound shall exist when the sound changes at rate greater than 10 dB per second. The sound level meter should use Fast Response for this evaluation.

- *If Sound is Periodic in Character – (hum, buzz, screech, etc.)*

Subtract 5 dB from Maximum Permissible Sound Levels

*Note* that for the purpose of this ordinance, a pure tone shall exist if the one-third octave band sound pressure level with the tone exceeds the arithmetic average of the sound pressure levels of the two contiguous one-third octave bands by 5 dB for center frequencies of 500 Hz and above and by 8 dB for center frequencies between 160 and 400 Hz and by 15 dB for center frequencies less than or equal to 125 Hz. A one-third octave band spectrum analyzer instrument will be required to make these evaluations.

Definitions and Terminology: The following definitions and terminology are applicable to the Performance Standards on noise in this ordinance.

- a. Background Sound Level and Background Noise Level - are to be interpreted as being the same and mean sound from all sources other than that under specific consideration and include sources such as traffic operating on public streets. It is determined by measuring the equivalent sound pressure level ( $L_{eq}$ ) and for this regulation it is measured over an 8 minute time period.
- b. A-weighted Sound Levels (dBA) – means the sound pressure level in decibels as measured on a sound level meter using the A-weighting network. The reading will be in dBA.
- c. Bounding Property Line and Lot Line – means the far side of any street, alley, stream or other permanently dedicated open space from the stationary source when such open space exists between the lot line of the stationary source and adjacent property. When no such open space exists the common line between two parcels of property shall be interpreted as the bounding lot line.
- d. Daytime – means the hours between 7:00 am and 10:00 pm on any given day. Night time is to be considered as the remaining hours of the day from 10:00 pm until 7:00 am
- e. Decibels (dB) – means a unit for measuring the volume of a sound. It is equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micro-pascals (20 micro- newtons per square meter).
- f. Equivalent Sound Pressure Levels ( $L_{eq}$ ) – means the time weighted, mean squared, A-weighted sound pressure level (dBA). The  $L_{eq}$  sound pressure level has the same acoustical energy as the time varying sound pressure levels measured during the monitoring time period.
- g. Impulsive Sound – means sound of short duration, usually less than one second, with an abrupt onset and rapid decay. It may be repetitive in nature.
- h. Noise – means unwanted sound and is any sound which annoys or disturbs humans or which causes or tends to cause an adverse psychological or physiological effect on humans.

- i. Noise Disturbance – means any sound which (a) endangers or injures the safety or health of humans or animals, or (b) annoys or disturbs a reasonable person of normal sensitivities, or (c) endangers or injures personal or real property.
- j. Mobile Sound Source – means sound pressure created by motorized vehicles designed to operate on public right-of-way, including, but not limited to, automobiles and aircraft.
- k. Person – means any individual, association, partnership, or corporation, and includes any officer, employee, department, agency, or instrumentality of a state or any political subdivision of a state.
- l. Periodic and Pure Tone Sound – means any sound which can be heard as a single pitch or set of single pitches.
- m. Property – means all contiguous land and any fixed or moveable object on such land, under common ownership, irrespective of leasehold or other interest.
- n. Receiver – means location where the sound is to be evaluated at opposite the bounding lot line from the sound source. The location is often referred to as a Noise Assessment Site (NAS).
- o. RMS Sound Pressure – means the square root of the time averaged square of the sound pressure.
- p. Sound – means the weighted sound pressure level obtained by use of a sound level meter and frequency weighting network, such as A or C as specified in ANSI S1.4. If the frequency weighting is not indicated, the A-weighting shall apply. If the meter time response is not indicated, the Slow response shall apply.
- q. Sound Levels and Sound Pressures Levels (dB) – means 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micro-pascals, and is expressed in decibels. The sound levels are usually denoted as Lp or SPL.
- r. Sound Pressure – means the instantaneous difference between the actual and the average or barometric pressure at a given point in space, as produced by sound energy

- s. Sound Level Meter – means an instrument which includes a microphone, amplifier, RMS detector, integrator or time averager, weighting network, and output meter used to measure sound pressure levels.
  - t. Stationary Sound Sources – means the fixed point of origin and location of emitter or emitters of sound under investigation. Multiple sources on a property shall be treated as a single source.
  - u. Permissible Sound Pressures Level – means the equivalent sound pressure level ( $L_{eq}$ ) and for this regulation measured over an 8 minute time period.
  - v. Time Weighted – means an established period of time during which the sound pressure levels are averaged. For this regulation the time period is 8 minutes.
  - w. Zoning District – means the designation as set forth in the Zoning Ordinance such as Residential, Commercial, or Industrial and their sub-section designations.
4. VIBRATION: No vibration shall be permitted which is discernible without instruments at the points of measurement specified in Subsection B.
5. LIGHTING: The purpose of this section is to regulate the placement, orientation, distribution patterns and fixture types of outdoor lighting. The intent of this section is to encourage lighting that provides safety, utility and security; also to prevent glare on public roadways, protect the privacy of residents and reduce atmospheric light pollution. These lighting regulations except for paragraphs (1.)(b.) and (1.)(c.) do not pertain to any exterior lighting allowed by electric permit issued prior to 04/17/01. Lighting for City or School District sports facilities and athletic fields, lighting located in a city right-of-way, facilities in areas zoned RA, Recreational/Amusement, emergency lighting, temporary construction lighting, Christmas lighting and those temporary uses permitted in Section 42 are exempted from these lighting provisions. All properties that are within the area bounded by Bethel Road, Bass Pro Boulevard and State Highway 26 on the south; Fairway Drive on the west; and the city limits line on the north and east are exempt from the lighting regulations in Section 5. In the case of uses allowed by a Conditional Use Permit, the appropriateness of the lighting shall be reviewed and approved as part of the approval of the Conditional Use Permit.

a. Light fixtures excluding accent lighting of architectural building features and lighting of public art or public monuments shall be mounted no higher than the highest point of the primary structure on the property. In no case shall light poles be greater than 30 feet in height.

b. All lighting excluding accent lighting of architectural building features, landscape architectural features, trees and lighting of public art, flagpoles and/or flags as allowed in Section 60. and public monuments shall comply with the following guidelines:

(1.) All lighting sources greater than 60 watts shall be provided with full-cutoff shielding with opaque tops and reflectors to:

(a.) Eliminate all direct upward illumination with the exceptions indicated in section 5.e. below

(b.) Eliminate all direct visibility of the lighting element at a point 5 feet above the ground level at all subject property lines adjacent to any residential zoning district(s).

(c.) Reduce light levels at ground level of all property lines of the subject property to the following levels based on the zoning of the adjacent properties:

- Single-family - 0.2 footcandles
- Multiple-family - .5 footcandles
- Non-residential districts, streets - 3.0 footcandles
- Industrial districts - 5.0 footcandles

c. All lighting sources except "accent lighting" as it pertains to features outlined in Paragraph 5.b. shall be directed downward to limit light levels at the subject property boundaries to those stated in section 5.b.1.c.

d. Illumination levels as required in Section 5.b.1.c. can be accomplished by louvers, baffles, visors or shields placed on the fixture or by fences, berms, elevation or any other method such that the required limitations indicated in Section 5.b.1.c are met.

e. Accent lighting of architectural building features may be provided through string or neon lighting elements to highlight architectural features providing the light levels for adjacent properties stated in Section 5.b.1.c are not violated. Upward lighting of architectural building features, public art, public monuments and signs is allowed, providing the lighting elements are shielded as stated in Section 5.b. and light levels for subject

properties are limited as stated in Section 5.b. All illuminated exterior signs shall meet the requirements of Section 5.b.

- f. Metering equipment - Lighting levels of outdoor lighting shall be measured in footcandles with a direct reading portable light meter with a color and cosine corrected sensor with multiple scales. The meter shall read within an accuracy of plus or minus five (5) percent. It shall have been tested and calibrated by an independent commercial photometric laboratory or the manufacturer within one (1) year of date of use as attested to by a certificate issued by such laboratory. All lighting installations shall be tested by a State of Texas licensed Professional Engineer or a Registered Master Electrician prior to final inspection by the City. Test results shall be submitted to the Building Inspection Department prior to final inspection. It shall be the property owner's responsibility to provide testing results at any time after the issuance of a certificate of occupancy, if requested by the Building Official to prove that legal illumination levels are being met.
  - g. Measurements to determine light levels shall be done with metering equipment described in Section 5.f. with a sensor mounted no more than six (6) inches above ground level in a horizontal position. Readings shall be taken only after the cell has been exposed to provide a constant reading. Measurements shall be made when the meteorological optical range is six (6) miles or greater such that measurements will not be adversely affected by atmospheric scatter. Measurements shall be made after dark with the subject property light sources off and then with them on. The difference between the two (2) readings shall be compared to the footcandle maximum ratings indicated in Section 5.b.1.c. This procedure eliminates the effects of moonlight and other ambient light.
  - h. In addition to the above requirements, no site lighting, building lighting, vehicular lights, or combination thereof shall be designed, installed, or utilized, so as to create reflective glare that creates a hazard, reduces privacy or inhibits the enjoyment of the surrounding properties.
  - i. For purposes of Section 55, 5. subject property shall be the property under study or investigation pursuant to the requirements of Section 55.5.
6. **LIQUID OR SOLID WASTE:** No discharge at any point into any public sewer, private sewer disposal system, or stream or into the ground, except in accordance with standards approved by the State Health Department or standard equivalent to those approved by such department, for similar uses, of any materials of such nature or temperature as can contaminate any water

supply, interfere with bacterial processes in sewage treatment or otherwise cause the emission of dangerous or offensive elements.

- B. In order to determine if actual violations are involved, certain measurements shall be taken to enforce performance standards for vibration and glare. These measurements are as follows: Twenty-five (25) feet from the source of origin at the closest lot line in any district or at the closest lot line if the distance from the source of origin is less than twenty-five (25) feet.
- C. Qualified expert consultants may be employed for analysis if, in the opinion of the Building Official, the proposed uses may cause dangerous or objectionable emissions. Consultant reports shall be completed according to a schedule agreed upon by the Building Official. Copies of reports shall be provided to both the building official and the applicant.
- D. In case of alleged violations of performance standards, the Building Official shall investigate and determine whether or not a violation is established otherwise by the City.